The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for ~~the preparation of~~ preparing tetrahydropterin ~~and~~ or a tetrahydropterin derivative comprising hydrogenating ~~derivatives by the hydrogenation of~~ pterin or a ~~and~~ pterin derivative ~~derivatives~~ with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst~~, wherein the hydrogenation is carried out in a polar reaction medium~~ that is ~~and~~ a metal complex ~~complexes~~ that is ~~are~~ soluble in the reaction medium, wherein the catalyst has ~~are used as the hydrogenation catalysts with~~ (i) a ligand ~~ligands~~ comprising a tertiary phosphine ~~phosphines~~, (ii) a ligand ~~ligands~~ comprising a tertiary phosphane, or ~~comprising~~ (iii) a bidentate ligand ~~ligands~~ with a tertiary amine group and a phosphine group or with two tertiary phosphine groups as complexing groups, wherein ~~whereby~~ the bidentate ligands form together with a metal atom a five- to ten membered ring.

2. (Currently Amended) A ~~The~~ process according to claim 1, wherein the polar reaction medium is an aqueous or alcoholic reaction medium.

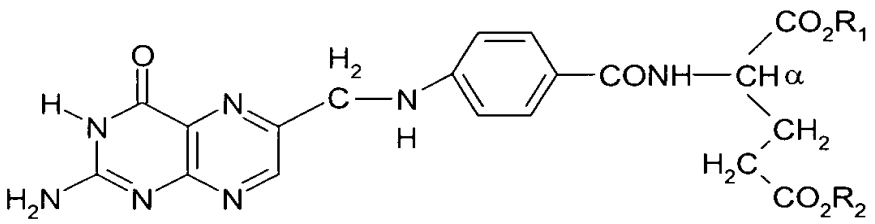
3. (Currently Amended) A ~~The~~ process according to claim 1, wherein the pterin derivative ~~derivatives used~~ is ~~are~~ folic acid, a folic acid salt ~~salts~~, a folic acid ester ~~esters~~, a folic acid ester salt ~~salts~~ or a dihydro ~~forms~~ form thereof ~~for hydrogenation with hydrogen in the presence of a hydrogenation catalyst, the hydrogenation carried out at~~

~~elevated pressure in the presence of metal complexes dissolved in the reaction medium as hydrogenation catalysts~~, with the proviso that in the event of using folic acid, a carboxylic acid ~~acids~~ thereof or a dihydro ~~forms~~ form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester ~~esters~~, a folic acid ester salt ~~salts~~ or a dihydro ~~forms~~ form thereof, the reaction medium is an alcohol.

4. (Currently Amended) A ~~The~~ process according to claim 1 ~~for the asymmetric hydrogenation of prochiral pterin derivatives with hydrogen in the presence of a hydrogenation catalyst~~, wherein the metal complex contains a chiral ligand ~~the hydrogenation is carried out in a polar reaction medium and metal complexes that are soluble in the reaction medium are used as the hydrogenation catalysts, the metal complexes containing chiral ligands~~.

5. (Currently Amended) A ~~The~~ process according to claim 3, wherein the metal complex contains a chiral ligand ~~4 for the asymmetric hydrogenation of folic acid, folic acid salts, folic acid esters, folic acid ester salts or dihydro forms thereof as pterin derivatives, with hydrogen in the presence of a hydrogenation catalyst, wherein the hydrogenation is carried out at elevated pressure in the presence of metal complexes dissolved in the reaction medium as hydrogenation catalysts, the metal complexes containing chiral ligands, with the proviso that where folic acid, carboxylic acid salts thereof or dihydro forms are used, that the reaction medium is aqueous, and where folic acid esters, folic acid ester salts or dihydro forms thereof are used, the reaction medium is an alcohol~~.

6. (Currently Amended) A ~~The~~ process according to claim 5, wherein the folic acid ester salt is of ~~salts satisfy~~ formula III and is ~~are~~ in the form of a single enantiomer or a mixture of enantiomers of formula III ~~their enantiomers or mixtures~~,



x HA (III),

in which

one of R_1 or R_2 is H, and the other one of R_1 or R_2 is a monovalent hydrocarbon radical or a hydrocarbon radical in which one or more carbon atoms are independently replaced with a heteroatom selected from the group consisting of -O-, -S-, and -N-, the hydrocarbon radical in which one or more carbon atoms are independently replaced with a heteroatom being attached via a carbon atom, or

both R_1 and R_2 independently of one another represent a monovalent hydrocarbon radical or a hydrocarbon radical in which one or more carbon atoms are independently replaced with a heteroatom selected from the group consisting of -O-, -S-, and -N-, the hydrocarbon radical in which one or more carbon atoms are independently replaced with a heteroatom being attached via a carbon atom ~~radical attached via a carbon atom, with heteroatoms selected from the group comprising -O-, -S-, and -N-~~,

HA stands for a monobasic to tribasic inorganic or organic acid, and

x denotes an integer from 1 to 6 or a fractional number between 0 and 6.

7. (Currently Amended) A ~~The~~ process according to claim 6, wherein ~~the acid~~ HA ~~in formula III~~ is unsubstituted or substituted phenylsulphonic acid.

8. (Currently Amended) A ~~The~~ process according to claim 1, wherein said process is carried out at a hydrogen pressure of 1 to 500 bars.

9. (Currently Amended) A ~~The~~ process according to claim 1, wherein ~~the~~ said process is carried out at a temperature is 0 to 150^0 C.

10. (Currently Amended) A ~~The~~ process according to claim 1, wherein the molar ratio of ~~substrate~~ pterin or pterin derivative to catalyst is 10 to 100,000.

11. (Currently Amended) A ~~The~~ process according to claim 1, wherein the aqueous reaction medium is water or water in admixture with an organic solvent.

12. (Currently Amended) A ~~The~~ process according to claim 2, wherein the alcoholic reaction medium is an alcohol, or an alcohol in admixture with an organic solvent.

13. (Currently Amended) A ~~The~~ process according to claim 1, wherein the metal complex contains ~~complexes contain~~ a d-8 metal ~~comprising iridium, rhodium or ruthenium~~.

14. (Currently Amended) ~~The process according to claim 1, wherein the metal complex contains~~ A process for preparing tetrahydropterin or a tetrahydropterin derivative comprising hydrogenating pterin or a pterin derivative with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst that is a metal complex that is soluble in the reaction medium, wherein the catalyst has a ligand that is an achiral or chiral ditertiary diphosphine ~~diphosphines as ligand~~.

15. (Currently Amended) A ~~The~~ process according to claim 14, wherein the reaction medium is an alcoholic reaction medium, and wherein in the ditertiary diphosphines ~~for an alcoholic reaction medium are ones in which~~ the phosphine groups are attached (a) to various carbon atoms of a hydrocarbon chain having 2 to 4 carbon atoms, or (b) directly via a bridging group $-CR_aR_b-$ in the ortho positions of a cyclopentadienyl ring or to a cyclopentadienyl ring of a ferrocenyl, wherein R_a and R_b ~~where Ra and Rb~~ are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, phenyl, benzyl, or phenyl or benzyl substituted with 1 to 3 C_1-C_4 alkyl or C_1-C_4 alkoxy.

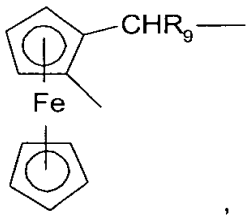
16. (Currently Amended) A ~~The~~ process according to claim 14, wherein the reaction medium is an alcoholic reaction medium, ~~wherein the diphosphines which can be used in an alcoholic reaction medium satisfy~~ and the diphosphine of formula IV,

$$R_4R_5P\text{-}R_6\text{-}PR_7R_8 \qquad (IV)$$

in which

R_4, R_5, R_7 and R_8 independently of one another represent a hydrocarbon radical with 1 to 20 carbon atoms, which is unsubstituted or substituted with halogen, C_1-C_6 alkyl, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, C_1-C_6 haloalkoxy, $(C_6H_5)_3Si$, $(C_1$-C_{12} alkyl$)_3Si$, ~~-NH2~~ $-NH_2$, -NH(C_1-C_{12} alkyl), -NH(phenyl), -NH(benzyl), -N(C_1-C_{12} alkyl$)_2$, -N(phenyl)$_2$, -N(benzyl)$_2$, morpholinyl, piperidinyl, pyrrolidinyl, piperazinyl, -ammonioum-X_3^-, -SO_3M_1, -CO_2M_1, -PO_3M_1, or -CO_2-C_1-C_6 alkyl, in which M_1 represents an alkali metal or hydrogen and X_3^- is the anion of a monobasic acid; or R_4 and R_5, and/or ~~and~~ R_7 and R_8 ~~respectively~~ together denote tetramethylene, pentmethylene, or 3-oxa-pentane-1,5-diyl, which is unsubstituted or substituted with halogen, C_1-C_6 alkyl or C_1-C_6 alkoxy; and ~~R6 is C2-C4~~ R_6 is C_2-C_4 alkylene, which is unstubsituted or substituted with C_1-C_6 alkyl, C_1-C_6 alkoxy, C_5 or C_6 cylcoalkyl, phenyl, napthyl, or benzyl; 1,2 or 1,3-cycloalkylene, 1,2- or 1,3-cycloalkyenylene, 1,2- or 1,3-bicylcoalkylene or 1,2- or 1,3-bicylcoalkenylene with 4 to 10 carbon atoms, which is unsubstituted or substituted with C_1-C_6 alkyl, phenyl, or benzyl; 1,2- or 1,3-cycloalkylene, 1,2- or 1,3-cycloalkylene, 1,2- or 1,3-bicycloalkylene or 1,2- or 1,3-bicycloalkylene with 4 to 10 carbon atoms, which is unsubstituted or substituted with C_1-C_6 alkyl, phenyl, or benzyl, at whose 1 and/or 2

positions or at whose 3-position methylene or C_2-C_4 alkylidene is attached; 1,4-butylene substituted in the 2,3 positions with $\underline{R_9R_{10}C(O-)_2}$ ~~$R_9R_{10}C(O-)2$~~, and which in the 1 and/or 4 positions is unsubstituted or substituted with C_1-C_6 alkyl, phenyl, or benzyl, and where R_9 and R_{10} independently of one another represent hydrogen, C_1-C_6 alkyl, phenyl or benzyl; 3,4- or 2,4-pyrrolidinylene or methylene-4-pyrrolidine-4-yl whose nitrogen atom is substituted with hydrogen, C_1-C_{12} alkyl, phenyl, benzyl, C_1-C_{12} alkoxycarbonyl, C_1-C_8 acyl, C_1-C_{12} alkylaminocarbonyl; or denotes 1,2-phenylene, 2-benzylene, 1,2-xylylene, 1,8-naphthylene, 2,2'-dinaphthylene or 2,2'-diphenylene, which is unsubstituted or substituted with halogen, -OH, C_1-C_6 alkyl, C_1-C_6 alkoxy, phenyl, benzyl, phenyloxy or benzyloxy; or R_6 stands for a radical of the formulas



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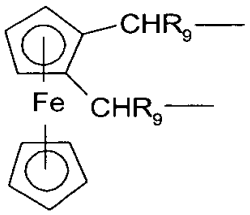

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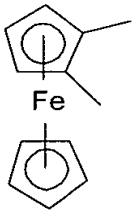

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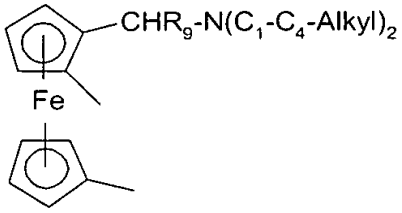

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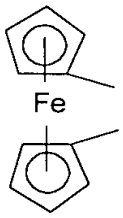

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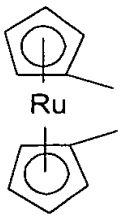

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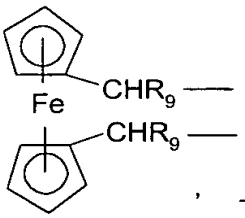

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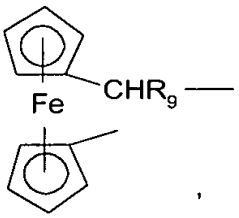

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in which R_9 denotes hydrogen, C_1-C_8 alkyl, C_1-C_4 fluoroalkyl, unsubstituted phenyl or phenyl substituted with 1 to 3 F ~~3F~~, Cl, Br, C_1-C_4 alkyl, C_1-C_4 alkoxy of fluoromethyl.

17. (Currently Amended) A ~~The~~ process according to claim 14, wherein the reaction medium is an aqueous reaction medium, and the diphosphine contains ~~wherein diphosphines for an aqueous reaction medium are ones that contain~~ one or more water-solubilising polar substituents, which are attached either direct or via a bridging group to substituents of the phosphine group ~~groups~~.

18. (Currently Amended) A ~~The~~ process according to claim 14 ~~17~~, wherein the reaction medium is an aqueous reaction medium, and the diphosphine is ~~wherein the diphosphines for an aqueous reaction medium are ones~~ of formula XLIII,

$$(M_1O_2C\text{-}CH_2CH_2\text{-}O\text{-}CH_2)_3\,C\text{-}NR_{42}\text{-}CO\text{-}\,R_{41} \qquad \text{(XLIII)}$$

in which M_1, stands for H, an alkali metal cation or an ammonium cation, R_{42} denotes C_1-C_4 alkyl or ~~and preferably~~ H, and R_{41} is a ~~the~~ monovalent radical of a chiral diteritary diphosphine, with the CO group being attached direct to a carbon or nitrogen atom of the diphosphine skeleton, or to an oxygen or nitrogen atom or to a carbon atom of a bridging group of the diphosphine skeleton.

19. (Currently Amended) ~~The process according to claim 1, wherein the hydrogenation catalysts are metal complexes of formulas~~ A process for preparing

tetrahydropterin or a tetrahydropterin derivative comprising hydrogenating pterin or a pterin derivative with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst that is a metal complex that is soluble in the reaction medium, wherein the catalyst has (i) a ligand comprising a tertiary phosphine, (ii) a ligand comprising a tertiary phosphane, or (iii) a bidentate ligand with a tertiary amine group and a phosphine group or with two tertiary phosphine groups as complexing groups, wherein the bidentate ligands form together with a metal atom a five- to ten membered ring, and wherein the hydrogenation catalyst is of formula XLIV, XLIVa ~~and~~ or XLIVb,

$[X_7Me_2YZ]$ (XLIV), $[X_7Me_2Y]^+A_2^-$ (XLIVa) $[X_7Ru(II)X_8X_9]$(XLIVb),

in which

Y stands for monoolefin ligands or a diene ligand;

X_7 represents an achiral or chiral ditertiary diphosphine that forms a 5 to 7 membered ring with the metal atom Me_2 or Ru;

Me_2 denotes Ir(I) or Rh(I);

Z represents –Cl, -Br, or –I; and

A_2 is ~~the~~ an anion of an oxy-acid or complex acid;

X_8 and X_9 are the same or different and have the meaning of Z ~~and~~ or A_2, or X_8, and X_9 stand ~~stands~~ for allyl or 2-methylallyl, or X_8 has the meaning of Z or A and X_9 stands for hydride.

20-28. (Cancelled)

29. (Currently Amended) A process for ~~the preparation of~~ preparing tetrahydropterin ~~and~~ or a tetrahydropterin derivative, comprising hydrogenating ~~derivatives by the hydrogenation of~~ pterin ~~and~~ or a pterin derivative ~~derivatives~~ with hydrogen in alcohol or in alcohol in admixture with an organic solvent in the presence of a hydrogenation catalyst~~, wherein the hydrogenation is carried out in a polar reaction medium and metal complexes that are~~ that is a metal complex that is soluble in the reaction medium ~~are used as the hydrogenation catalysts and wherein the alcoholic reaction medium is an alcohol, or an alcohol in admixture with an organic solvent~~.

30. (Currently Amended) A process for ~~the preparation of~~ preparing tetrahydropterin ~~and~~ or a tetrahydropterin derivative, comprising hydrogenating ~~derivatives by the hydrogenation of~~ pterin ~~and~~ or a pterin derivative ~~derivatives~~ with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst~~, wherein the hydrogenation is carried out in a polar reaction medium and metal complexes that are~~ that is a metal complex that is ~~soluble in the reaction medium are used as the hydrogenation catalysts and wherein the metal complex~~ and contains an achiral or chiral ditertiary diphosphine ~~diphosphines as ligand~~.

31. (Currently Amended) A process for ~~the preparation of~~ preparing tetrahydropterin ~~and~~ or a tetrahydropterin derivative, comprising hydrogenating ~~derivatives by the hydrogenation of~~ pterin ~~and~~ or a pterin derivative ~~derivatives~~ with hydrogen in an alcoholic reaction medium in the presence of a hydrogenation catalyst~~,~~

~~wherein the hydrogenation is carried out in a polar reaction medium and metal complexes that are~~ that is a metal complex that is soluble in the reaction medium and ~~are used as the hydrogenation catalysts wherein the metal complex~~ contains an achiral or chiral ditertiary diphosphine that is ~~diphosphines as ligand and wherein the ditertiary diphosphines for an alcoholic reaction medium are ones in which the phosphine groups are~~ attached (a) to various carbon atoms of a hydrocarbon chain having 2 to 4 carbon atoms, or (b) directly via a bridging group $-CR_aR_b-$ in the ortho positions of a cyclopentadienyl ring or to a cyclopentadienyl ring of a ferrocenyl, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, phenyl, benzyl, or phenyl or benzyl substituted with 1 to 3 C_1-C_4 alkyl or C_1-C_4 alkoxy.

32. (Currently Amended) A ~~The~~ process according to claim 14, wherein the ditertiary ~~diphosphines are are~~ diphosphine is a tertiary phosphino imine ~~imines~~.

33. (New) A process according to claim 3, wherein the hydrogenation is carried out at elevated pressure.

34. (New) A process according to claim 1, wherein the metal complex contains iridium, rhodium or ruthenium.

35 (New) A process according to claim 14, wherein the reaction medium is an alcoholic reaction medium, and wherein in the ditertiary diphosphines the phosphine groups are attached (a) to various carbon atoms of a hydrocarbon chain having

2 to 4 carbon atoms, or (b) directly via a bridging group $-CR_aR_b-$ in the ortho positions of a cyclopentadienyl ring or to a cyclopentadienyl ring of a ferrocenyl, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, phenyl, benzyl, or phenyl.

36. (New) A process according to claim 18, wherein R_{42} denotes H.

37. (New) A process according to claim 31, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, phenyl, benzyl, or phenyl.

38. (New) A process according to claim 14, wherein the pterin derivative is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

39. (New) A process according to claim 19, wherein the pterin derivative is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event

of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

40. (New) A process according to claim 29, wherein the pterin derivative is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

41. (New) A process according to claim 30, wherein the pterin derivative is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

42. (New) A process according to claim 31, wherein the pterin derivative is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.